Volume 5, Issue 5 Home Appliances Newsletter May 2011

Samsung Electronics America

Samsung Tech Talk

Your source for service information

Inside this issue:

SPSN Update	1
Are You Checking the Water Level Sensors Correctly?	2
GSPN Updates	3
Diagnosing a Microwave Oven Rectifier Correctly with a Digital Multi-meter	4
Refrigerator Drawer Timing	6
Icemaker Troubleshooting	7
Is It the Main Board or the C-Fan Motor?	9
The WF 210 "ds" (Door Switch) Error Code	10
Washer Vibration and Noise	12
Diagnosing and Repairing the Control Panel on the DMT800 Dishwasher	14
2011 RTC Home Appliance Training	17

SPSN Update

Karen Tillery

Service Marketing, Senior Staff

April has been a big month for the Samsung Product Support Network! For consumers, we've created dozens of How-To videos. These include eight Smart Hub/ Smart TV videos and six HDTV Troubleshooting titles, with more to come. We've also released videos on some of Samsung's new digital cameras including the SH100 and ST700 models. Our new Keep It Simple show now includes special accessory segments. So far, we've had special segments dedicated to Q10 HD Camcorder accessories, the full QWERTY Remote Control for TVs, and the SPSN Samsung Mobile App. Consumers can also troubleshoot their Samsung PCs with our new Samsung Recovery Solution How-To videos.

And that's just consumer content! For internal technical training, SPSN is putting the finishing touches on over fifty helpful How-To training videos for Home Appliances and the Television Certification program. This is part of an initiative to reduce damage claims and improve customer service. We've also prepared three PC training videos and shot a Live Training show on printers, more specifically, a review of SWS 2.0 for the current A3 printer line of products.

In addition to all that, we still broadcast our LIVE show, Keep It Simple, every Thursday at 4:30pm EST covering a wide range of your favorite Samsung Products. We take live viewer questions and even feature special guests, so make sure to log on to www.samsung.com/spsn to watch! You can also check out our SPSN Mobile App on your Android device and download our SPSTV App from Samsung Apps for access to our entire library of videos and live shows.

Left: A still from the Mobile App Live show.

Are you Checking the Water Level Sensors Correctly?

Nicholas Webert

Assistant Manager, Regional Technical Trainer

Are you having trouble figuring out how to test the water level sensor in a dishwasher? Follow the steps below to be sure that you are testing the water level sensor correctly, and then order the correct part to fix the unit right the first time.

Models: DMT400RHB/XAA, DMT400RHB/XAC, DMT400RHS/XAA, DMT400RHS/XAC, DMT400RHW/XAA, DMT400RHW/XAC, DMT700RHB/XAA, DMT700RHB/XAC, DMT700RHS/XAA, DMT700RHS/XAC, DMT700RHW/XAA, DMT700RHW/XAC, DMT800RHB/XAA, DMT800RHB/XAC, DMT800RHS/XAA, DMT800RHS/XAC, DMT800RHW/XAA, DMT800RHW/XAC.

Issue: The unit shows a 5E fault, but the water has drained completely from the unit, or the unit shows 9E when the unit is filling with water or at the beginning of the wash cycle.

Explanation: The Level Sensor monitors the water level in the unit as the unit fills or drains. The sensor sends back a pulse of DC voltage to the control board. The control board then determines how much water has entered the unit or if the unit has drained. To verify that the sensor is working, make the following checks:

1. Verify the voltage on CN301 pin 2 (red) to CN302 pin 7 (orange ground), and CN301 pin 4 (Grey) to CN302 pin 7 (orange ground) for 4.3 VDC. This voltage should be constant. To verify the switch is working, force the contacts closed with a jumper wire.
2. Check CN301 pin 7 (pink) to CN302 pin 7 (orange ground) for 5 VDC. If there is no voltage here, replace the control board.
3. With no water in the unit, check CN301 pin 1 (Brown) to CN302 pin 7 (orange ground) for .02VDC and CN301 pin 3 (yellow) to CN302 pin 7 (orange ground) for .12 VDC. As the unit fills, the voltage on pin 1 and pin 3 will start to reverse. What happens is a small signal indicates that water has entered the unit. As it passes the two switches, the frequency changes and the control shuts down the fill valve (high level). This operation works in reverse while the unit is draining. During the drain, if the frequency does not change in 1 to 3 minutes, the control board thinks that the unit did not drain (low level). Replace the water level sensor.

GSPN Updates

Jim Foster
Manager, Training /Publications

We encourage you to use our GSPN site to find the latest service bulletins to aid you with your repairs.

http://service.samsungportal.com

HA Service Bulletins uploaded to GSPN April, 2011

Bulletin Number	Subject	Applicable Models
ASC20110411001	New Refrigerator Door Handles	RF series Fridges
ASC20110411002	New Refrigerator Door Handles	RF 4 series Fridges
ASC20110411003	New Refrigerator Door Handles	RFG series Fridges
ASC20110428001	Power PCB Fuse Open	FE-N300WX/XAA, FE-N500WX/XAA
ASC20110428002	Power PCB Pattern Fuse Open	FTQ307NWGX/XAA

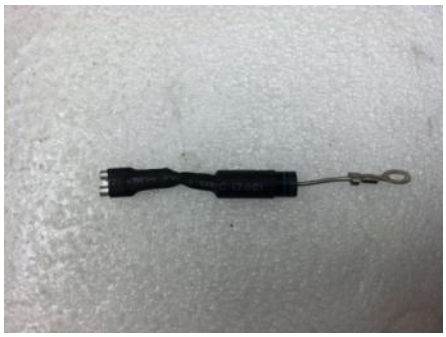
To access service bulletins on GSPN, first visit http://service.samsungportal.com. Login using your **User ID** and **Password**. Click on “Documents” at the top, then “Product Information” in the left column. The Product Information menu will appear. Click on “Service Bulletin (Local) to bring up the Service Bulletins. To search for a bulletin, enter the bulletin number in the search window at the upper left. If for some reason the bulletin does not appear, it can still be searched using the “Select Depth 1, 2, and 3” drop-down menus.

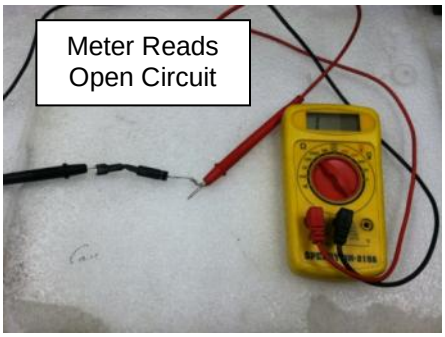
Diagnosing a Microwave Oven Rectifier with a Digital Meter

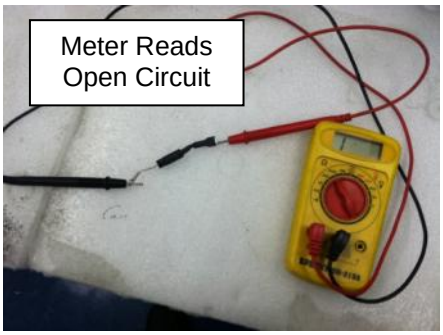
Wes Sirois

Assistant Manager, Triage Lead

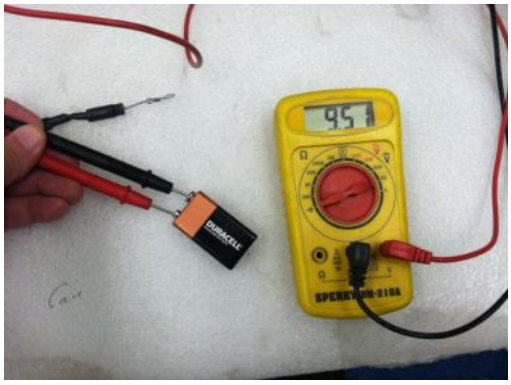
Most technicians use digital multi-meters to help them perform their daily jobs. While this equipment is adequate to test most appliance electrical and electronic components, microwave oven rectifiers (diodes) cannot be properly checked for resistance with a digital meter. As shown in the pictures below, a good diode will read open, even with a multi-meter that has a diode setting.



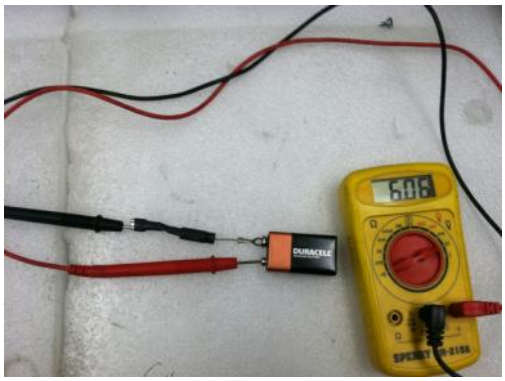




Using an analog meter with a resistance range of 20,000 ohms and an internal 9 volt battery is the proper way to check a high voltage diode, but in this age of digital meters, very few technicians carry both types. So what should you do to check a microwave diode with a digital meter properly? Here is a quick test that will work every time.



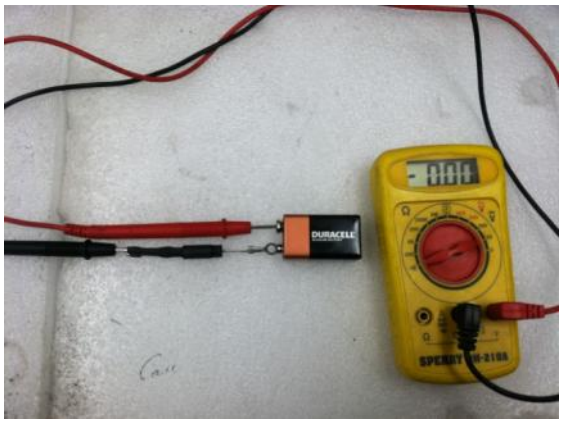
1. Set the meter to DC and check a 9 Volt battery to get a baseline voltage. In this case the meter reads 9.51 Volts DC. Note that the positive (red) lead is on the positive terminal of the battery.



2. Attach one end of the diode to the negative (black) lead and touch the diode to the negative terminal on the battery. When the red lead is touched to the positive terminal, a good diode will read voltage, but it should be less than the baseline reading, (In this case, the reading is 6.06 volts DC). This is due to the high resistance of the diode.

Diagnosing a Microwave Oven Rectifier with a Digital Meter

continued



3. Switch leads so that the positive lead is now touching the negative terminal and the diode is touching the positive terminal while still attached to the negative lead. There should be no voltage read.

If the readings you see are the same as described here, the rectifier (diode) is good. If voltage is read in both steps, or if no voltage is read in either step, the rectifier has failed and should be replaced.

All other appliance electrical or electronic parts can be checked using your digital multi-meter, but you now have an easy method for using the same meter to check the high voltage rectifier properly.

Please Send Us Your Comments!

Something you'd like to see in the Samsung Tech Talk Newsletter? If there a topic/issue we haven't covered that you'd like us to write about, **LET US KNOW!**

Please send your comments to:

training@sea.samsung.com

Refrigerator Drawer Timing

Paul Pieri
Trainer—RTSC

French Door and new 4 door (RF4) models have the same mechanisms for closing the Flex and Freezer drawers. The rails are timed using gears and a square timing bar to keep the left side and right side rails timed together so the drawers close properly and evenly. If the drawer does not close evenly, there will be temperature problems and, especially with the freezer drawer, frost build up.

To time the rails properly if you have had to remove the timing bar, slide the left and right rails out as far as they go, insert the bar, and then insert the plastic holding pin to lock the bar in place.

Figure A

Figure B

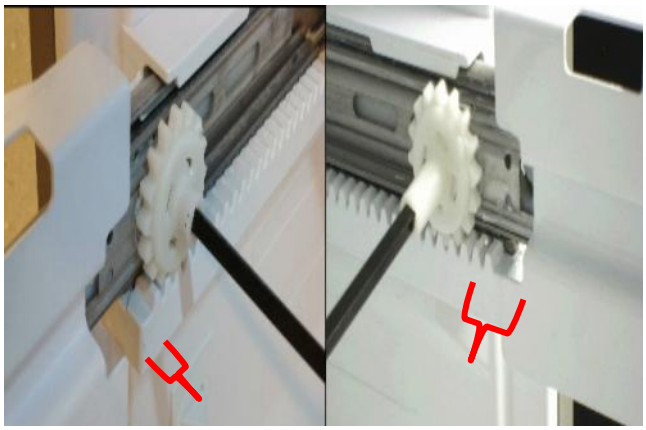


Figure A shows the rail gears and bar properly timed. Figure B shows the timing is off. Notice the extra gear teeth showing on the right and not the left side in Figure B. The resulting door closure might look something like Figure C.

Figure C

If not timed correctly, the door will not seal, causing frost buildup.

Icemaker Troubleshooting

Jim Swift, *HA Product Senior Manager*
Steve Polzin, *Technical Instructor, Appliance Tech Support Specialist*

In the summer months, No Ice or Slow ice production becomes the number 1 refrigerator service call. Listed below are some quick tests to isolate the problem and efficiently repair the refrigerator.

Samsung uses two types of Ice maker designs, flex tray and heated mold type. The table below shows some specific detail about the design and performance characteristics.

Icemaker Type	Heated Mold	Flex Tray
Normal Harvest Temperature	~18 degrees F	~ 1 degree F
Nominal Time to Harvest	~ 60-80 minutes	~ 70-90 Minutes

Nominal time to harvest assumes the freezer has been cooling properly for a minimum of 24 hours. If the door is opened between harvests the time to harvest will be extended.

No Ice Complaint

1. Verify with the customer that the unit has been on for 24 hours and the freezer is cooling properly.
2. We recommend you check the icemaker sensor from the Main PCB first. (After making an initial assessment, AVOID opening the compartment doors until this test is complete). Using the Fast Track manual, identify the icemaker connector and take your measurement. Icemaker sensor voltage at the Main PCB should be 3.6V or higher for the Flex Tray type and 3.2V or higher for the Heated Mold type.
3. Now is the appropriate time to check the compartment temperature. Open the door and measure the temperature at the closest cube to the front. This is the same location as the temperature sensor. Using the temp conversion chart found in the Fast Track manual, convert the voltage measurement you took of the icemaker sensor and compare it to the actual temp reading you have just made.
4. Confirm the Ice maker voltage matches the measured temperature at the Main PCB.
   a. If they match, the Icemaker sensor and wiring are ok.
   b. If the temp value is 3 or more degrees below the nominal harvest temperature value (see the table above), suspect a bad Main PCB.
   c. If they don't match, suspect a bad Icemaker sensor.

Icemaker Troubleshooting

continued

5. To check the fill mode manually, initiate a harvest by pressing the icemaker bypass. For the Heat Release models, press the bypass located on the right side of head assembly and hold for 5-10 seconds. It will take approximately 5 minutes for the board to start harvest. For Flex Tray designs, press the bypass on the bottom of the head assembly until tray starts to turn. This will take approximately 5 seconds.
    a. If the water level is correct, the water components are working properly.
    b. If the level is low or there is no water, check the water connections, water valve, fill tube, and filter.

Slow Ice Complaint

Always use the minimum expectation of ice production for a 24 hour period as a guideline when evaluating a slow ice complaint.

What does this mean?

The ice maker should average at least 12 harvests in a 24 hour period, yielding approximately 84 cubes. Under optimal conditions, the harvest mode should occur every 60 to 90 minutes depending on the model and icemaker type. However, when you take into account defrost cycles, usage, and ambient conditions such as temperature, humidity etc. the ice maker is likely not operating under optimal conditions. This is why 12 harvests in a 24 hour period should be considered normal.

If your evaluation suggests the ice maker is not achieving the minimum acceptable yield in a 24 hour period, follow steps 1 through 4 in the No Ice section of this article.

Is It the main Board or the C-Fan Motor?

Tony Perkins

Assistant Manager, Regional Technical Trainer

The c- ("compressor" – "condenser", your choice) fan motor on the inverter-compressor model refrigerators isn't your typical, run-of-the-mill, fridge fan motor. Determining whether it or the main PCB is the cause of an overheating compressor can be daunting.

First, a little c-fan motor operation explanation:

(**Note**: In this example we'll use the RF4287HARS/XAA, but other models are similar.)

The c-fan is a dc motor, normally operating between 7-11Vdc. The main PCB is responsible for turning on the fan motor via a switched power circuit. The fan is monitored by the main microprocessor through its Frequency Generator (FG) feedback line. Whenever the fan is spinning, the motor produces a small electrical pulse that is conditioned and sent back to the micro via the FG line. This is why the fan motor has 3 wires: Red (+), Black (-) & White (FG).

If the fan motor should stop for any reason, the micro will acknowledge this interruption and turn off the motor's power circuit for 10 seconds. Then, it will switch the fan motor's power circuit back on for 3 more seconds and look again for the FG signal. If it still doesn't see the feedback, it once again turns off the fan motor's power circuit. The micro will repeat this cycle of 3 seconds "On" and 10 seconds "Off" for five complete cycles, If the FG signal is still not seen, the micro will shut off the fan motor's power circuit for 10 minutes. This power interruption could lead you to believe either the fan and/or the main board is defective. A quick test to confirm the c-fan is working is shown below. Use the test to ensure you don't replace parts unnecessarily.

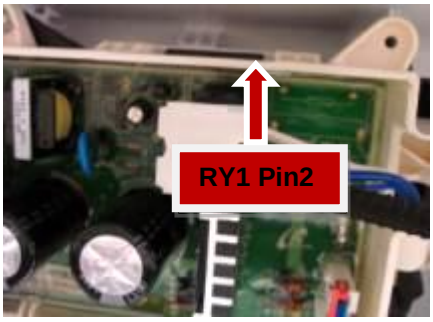
1. Locate the c-fan power connector near the compressor and remove it.	
2. Insert multi-meter lead tips (removed leads from multi-meter) into the corresponding red and black wires in the connector.	
3. Apply a good 9v transistor battery to the other ends of the multi-meter leads (Red = "+" and Black = "-"). If needed, the battery can be removed from the multi-meter.	
4. A properly working fan motor will start spinning. **Note**: You can also use this test on other DC fan motors in the refrigerator that may be in question: Fridge, Freezer, Ice Room, etc.	

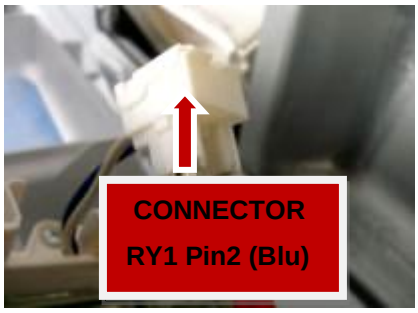
The WF210 "ds" (door switch) Error Code

Louis Picchione
Assistant Manager—HA

To check the door switch when there is a "ds" error, first take a resistance reading from CN5 Pin 6 (Wht) and RY1 Pin 2 (Blu). See below. The resistance reading should be about 48 Ω (with the door closed). If the resistance check is good, indicating that the board, wire connections, and door switch are good, check the door lock mechanism (see the next page).

Taking the Reading





The WF210 "DS" (Door Switch) Error Code

continued

Checking the Door Lock Mechanism

1. In the photo above, the door lock mechanism is stuck in the wrong position. In this position, it's preventing the door from locking.

2. Place a small screw driver into the small hole in the back of the door lock and push the mechanism forward. This will reposition the door lock.

3. After the door lock is repositioned, test and reassembles the door switch.

Confirming the Door Switch is Working

To confirm that the door switch is functioning correctly, put the washer into the Quick Test Mode (press Spin + Soil Level + Power), and then check the door lock by pressing the Spin Key. If the lock symbol goes off, the door switch is now operational.

Washer Vibration and Noise

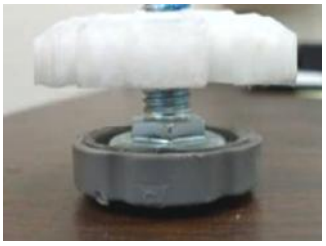
Louis Picchione

Assistant Manager—HA

It is normal for a washer to produce some vibration and noise for about 1 -2 seconds when the VRT is stabilizing the machine. This brief vibration and noise will occur around 350 – 400 RPMs. Any vibration or noise prior to this is not normal. Each washer, depending on the model, will have a different vibration point before the VRT is set. Below are the vibration points of some of the different models. Similar models will have similar vibration points.

- WF210 – Dual VRT, light weight, vibration point around 175 RPMs.
- WF419 – Single VRT, heavy weight, vibration point around 225 RPMs.
- WF448 – Dual VRT, heavy weight, vibration point around 130 RPMs.

To prevent or correct excessive vibration, follow these steps:



STEP #1

Make sure that the leg adjustment height is no higher than the picture on the left.

STEP #2

Using a carpenter's level, level all four sides of the washer to make sure the entire washer is level.

STEP #3

Put 1 or 2 wet towels into the tub. There must be some weight in the tub when you test the washer for vibration.

Washer Vibration and Noise

continued

STEP #4

After you have placed 1 or 2 wet towels into the machine, close the door and place the unit into the Service Mode. Refer to the Fast Track Manual for instructions on how to enter the Service Mode for model you are servicing. For the model pictured earlier in this article, to enter the Service Mode, you'd press the Extra Rinse + Signal keys with the power on. Once the washer is in the Service Mode, press the Delay Start + Ag Care keys to enter the Quick Spin test mode.

After you have activated the Quick Spin test mode, observe the unit for any noise, or vibration. The washer pictured on the previous page had excessive vibration and noise around 139 RPMs.

As soon as the unit starts to vibrate and make noise, press the Start/Pause key. If you press the Start/Pause key when the washer is in the Quick Spin test mode in Service Mode, the unit will continue to spin at the current RPM. Stabilize the unit by adjusting the washer legs. The example unit was stabilized at 139 RPMs by adjusting the front two washer legs little by little.

Once the unit is stabilized, press the Delay Start + Ag Care keys again, allowing the unit to continue to ramp up to maximum RPMs. After the unit reaches maximum RPMs with no problems, repeat the Quick Spin test to make sure the vibration issue has been corrected.

Samsung Electronics America
85 Challenger Road
Ridgefield Park, NJ 07660

Phone: 201-229-4251

The information in this bulletin is published for experienced repair technicians only and is not intended for use by the public. It does not contain warnings to advise non-technical individuals of possible dangers in attempting to service a product. Only experienced professional technicians should repair products powered by electricity. Any attempt to service or repair the product or products dealt with in this information by anyone else could result in serious injury or death. Information provided in this bulletin is subject to change or update without notice.

Diagnosing and Repairing the Control Panel on the DMT800 Dishwasher

Kurt Schuster

Product Specialist

Sealed control panels with their minimal contact buttons are truly wonderful things. However, the one thing they lack is tactile feedback and, as a result, it can be difficult to know whether you are operating the control properly or if it is just broken.

Besides keeping the control panel clean, the best way to assure its proper operation is to touch the center of the control area directly over the markings on the button.

Except for those controls that specifically call for holding the control for three seconds such as Child Lock or Cancel & Drain, the controls should all respond within one-half to one second. But, if you are testing keys, repeatedly operating the same key will cause the touch response to become less sensitive. If the button indicators are not turning on and there is no chime to confirm the operation of the buttons, wait at least one minute before trying to operate again.

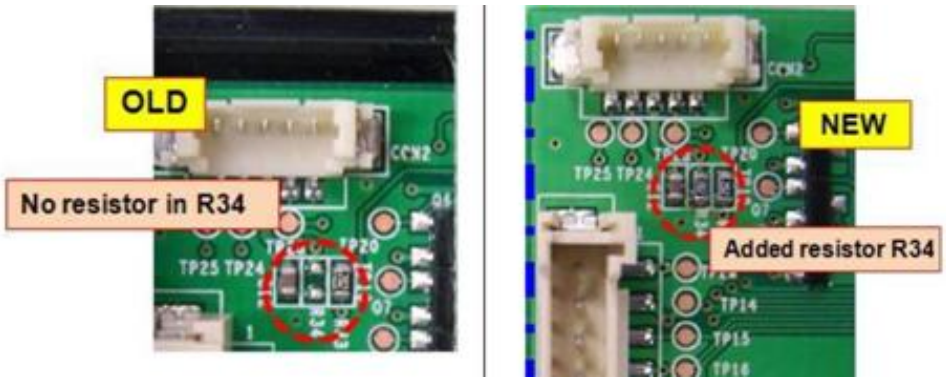
In some cases it may be necessary to disconnect the power for thirty seconds or so to reset the washer before trying to operate the controls. While this should restore operation, it may only be temporary. If a wash cycle is run right away, or within thirty minutes or so, the controls should operate normally for the duration of that wash cycle, but then may require resetting again immediately or after two or three more wash cycles. Wait longer than that initial thirty minutes and the unit may require resetting all over again even before running a wash cycle. In short, don't be fooled into thinking you've got an NDF or an unrepairable unit because either the controls appear to operate or do not appear to operate. It will just turn into a repeat repair.

Fortunately, for units produced between June 2010 and December 2010, (serial number range **Z6**~**ZC**), you can fairly easily resolve a problem with inoperable controls: Replace the "Window-Panel Hidden", Part Number DD64 0066AA, with the modified version of the part. When you order, you will automatically receive the modified part.

Above: Window –Panel Hidden. See the next page for more details.

Diagnosing and Repairing the Control Panel on the DMT800 Dishwasher

continued



To confirm you received the modified replacement part, look for a small chip resistor in the R34 position as shown in the illustration.

Please note that when ordering the part number above, that the “Guide-LED Cover”, part number DD63-00107A, and the “Guide-LED”, part number DD63-00116A, are not included and must be removed from the unit under repair.

In addition, do not attempt to separate the PCB from the Window Panel. Doing so will permanently damage the assembly.

As usual, for your own protection, be certain the power to the unit is disconnected or switched OFF before proceeding with the disassembly or repair of the unit.

Disassembly Procedure

Preparation Make sure to disconnect the power to the unit. Remove the lower basket and cover the sump assembly to prevent screws from falling into the sump.	
1. Open the door completely and remove the twelve #20 Torx head screws securing the tub front, frame front, and control panel in place. After removing the panel, hold the tub front to prevent it from suddenly closing.	
2. Carefully pull out the frame front and the control panel assembly.	

Diagnosing and Repairing the Control Panel on the DMT800 Dishwasher

3. Remove the control panel assembly by pulling it out slightly then pushing down.	
4. Remove the two screws securing the control panel in place.	
5. Insert a flat blade screwdriver into the gap and pry the panel loose.	
6. Disconnect the wiring connector.	
7. Remove the two screws securing the LED guide. Transfer the LED guide to the new assembly.	
8. Reverse steps 1 through 7 to install the replacement assembly.	

Once the new Control Panel PCB is in place, the buttons should operate within the ½ to 1 second time frame and provide both audible and visual feedback indicating proper operation.

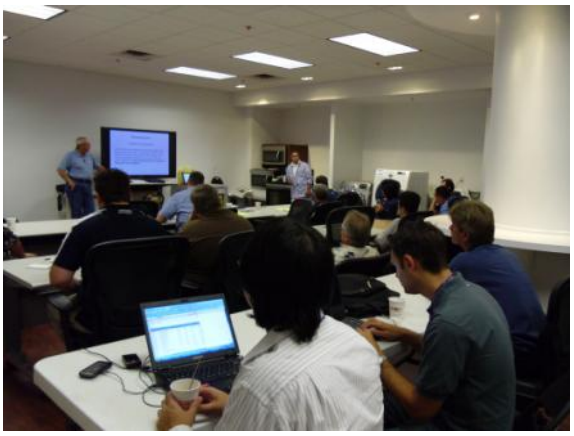
2011 RTC Home Appliance Training

Samsung HA Training 2011
Being held at one of our four Regional Training Centers!

Attend in depth, hands-on training at one of our RTCs.

You can reserve your seat for training by emailing training@sea.samsung.com.

Additionally, Home Appliance training is available on-demand 24/7 at https://my.plus1solutions.net/clientPortals/samsung/



Date	City	Comments
May 3-5, 2011	Little Ferry, NJ	ME Training
May 3-5, 2011	Rancho Dominquez, CA	ME Training
May 24-26, 2011	Bensenville, IL	ME Training
May 24-26, 2011	Austell, GA	ME Training
June 7-9, 2011	Little Ferry, NJ	ME Training
June 7-9, 2011	Rancho Dominquez, CA	ME Training
June 28-30, 2011	Bensenville, IL	ME Training
June 28-30, 2011	Austell, GA	ME Training